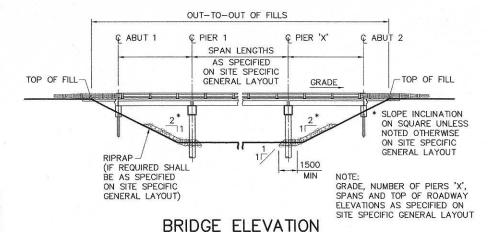
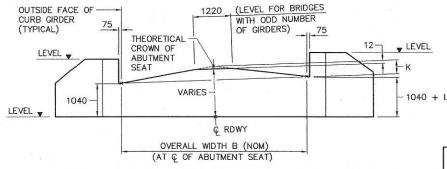
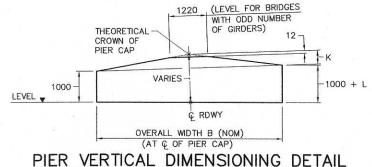
## Ç PIER 1 Ç ABUT 1 C PIER 'X' Ç ABUT 2 C RDWY

### BRIDGE PLAN





#### ABUTMENT VERTICAL DIMENSIONING DETAIL (ON SQUARE)



(ON SQUARE)

### **UMA AECOM**

NUMBER

OF GIRDER

LINES

10

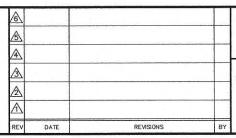
#### PERMIT TO PRACTICE UMA ENGINEERING LTD. 2005 Ptanano et PERMIT NUMBER: P329 The Association of Professional Fagin Geologists and Geophysicists of Alberta



DATE AUG. 9, 2005







#### \*\*\* WORK THESE DRAWINGS TOGETHER WITH SITE SPECIFIC GENERAL LAYOUT AND STANDARD SCC COMPOSITE BRIDGE GIRDER DRAWINGS S-1630, S-1631, S-1632, S-1633, S-1634, S-1635 AND S-1636. RECOMMENDED DIRECTOR BRIDGE ENGINEE

Alberta Infrastructure and Transportation

STANDARD

SIGN POST

SCC PRECAST GIRDER BRIDGES WITH CAST-IN-PLACE CONCRETE SUBSTRUCTURES - SHT 1

- . THE CONTRACTOR MAY ELECT TO ERECT THE GIRDERS PRIOR TO BACKFILLING. IN THIS CASE, THE BACKFILLING MAY COMMENCE IMMEDIATELY AFTER GIRDERS ARE SECURED IN PLACE
- IF IT IS NECESSARY TO PARTIALLY BACKFILL PRIOR TO GIRDER ERECTION, THE CONTRACTOR SHALL PROVIDE A RESTRAINT SYSTEM AND MONITOR WALL DEFLECTIONS WITH ADEQUATE INSTRUMENTATION DURING THE BACKFILL STAGE.

#### GIRDER INSTALLATION

· REFER TO STANDARD SCC COMPOSITE BRIDGE GIRDER DRAWINGS (LATEST REVISION).

#### **MATERIALS**

BACKFILL

- · ALL CONCRETE SHALL BE CLASS C EXCEPT PILE CONCRETE SHALL BE USED FOR PIPE PILE INFILL. SULPHATE RESISTANT PORTLAND CEMENT (TYPE 50) SHALL BE USED IF DETERMINED TO BE NECESSARY FROM THE GEOTECHNICAL INVESTIGATION.
- GIRDER DOWELS SHALL BE FABRICATED FROM SMOOTH ROUND BAR STOCK CONFORMING TO ASTM A1193-B7 (Fy = 725 MPa, Fu = 860 MPa). GALVANIZING SHALL BE STRICTLY APPLIED BY CONFORMING TO THE FOLLOWING PROCEDURE IN THE PRESENCE OF THE CONSULTANT:
- BRUSH BLAST DOWELS TO REMOVE MILL SCALE AND OIL - FLASH PICKLING NOT TO EXCEED 5 MINUTES
- QUICK DRY PRIOR TO HOT-DIP GALVANIZING
- (DO NOT STORE IN FLUX OR ACID RINSE)
- ALL STEEL PLATE AND SHAPES SHALL CONFORM TO THE REQUIREMENTS OF CSA G40.21M GRADE 350W UNLESS NOTED OTHERWISE, PIER PILE STD PIPE BRACING MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A53, PIER PIPE PILES SHALL CONFORM TO THE REQUIREMENTS OF ASTM 252 GRADE 2 (Fy = 240 MPa).
- · PIER PILES AND BRACES SHALL BE HOT-DIPPED GALVANIZED. GALVANIZING MAY BE OMITTED FROM PILE SURFACES LOCATED MORE THAN 1000 mm BELOW STREAMBED. ALL EXPOSED FIELD WELDS OF GALVANIZED MATERIAL SHALL BE THOROUGHLY CLEANED AND REPAIRED BY METALLIZING IN ACCORDANCE WITH ASTM - A780, METHOD A3 METALLIZING.
- · GALVANIZING SHALL CONFORM TO THE CURRENT CSA STANDARD G164.
- · ALL WELDING SHALL CONFORM TO THE CURRENT AWS SPECIFICATION D1.5.
- BEARING PADS SHALL CONSIST OF NEOPRENE 60 HARDNESS AND SHALL CONFORM TO SECTION 18 "BEARING DEVICES" DIVISION II OF THE AASHTO DESIGN STANDARD
- . BEARING DOWEL HOLE GROUT TO BE SIKA 212 WITH A MINIMUM 28 DAY STRENGTH = 40MPa

HAZARD

MARKER

(VERTICAL)

- 2-12mm DIA x 75 LONG BOLTS C/W HEX NUTS AND WASHERS (GALVANIZED) FIELD DRILL POST BRIDGERAIL POST TOP OF PLINTH GIRDER LENGTH ALIGN FIELD DRILLED HOLES -TO ENSURE THAT THE 14 m SIGN POST IS VERTICAL 10 m 12 m 14-14 m 10-10 m 12-12 m HAZARD MARKER DETAILS 10-10-10 m 12-12-12 m 14-14-14 m 10-12-10 m 12-14-12 m 14-14-14-14 m (SHOWN AS FOR PL-2 DOUBLE TUBE TYPE BRIDGERAIL)
- 8 m 8-8 m 8-8-8 m 8-10-8 m 10-14-10 m 8-12-8 m 12-12-12-12 r 10-10-10-10 m 8-14-8 m 12-14-14-12 r 8-8-8-8 m 10-12-12-10 m 8-10-10-8 m 10-14-14-10 m 8-12-12-8 m 8-14-14-8 m

· AFTER THE PILE DRIVING OPERATIONS HAVE STARTED. THE CONSULTANT MAY REVISE THE REQUIRED PILE TIP ELEVATION PROVIDED THAT THE MINIMUM SPECIFIED BEARING CAPACITIES TO RESIST THE LOADS PRESENTED IN TABLES 1 AND 2, AND THE SPECIFIED MINIMUM PILE PENETRATION, HAVE BEEN ACHIEVED. · PIER PILES SHALL PENETRATE AT LEAST 6 m BELOW STREAMBED.

· PILE TOLERANCES SHALL BE AS PER SPECIFICATIONS FOR BRIDGE CONSTRUCTION EXCEPT THAT BOTH PIER AND ABUTMENT PILES SHALL NOT BE OUT OF SPECIFIED POSITION

• EARTH PRESSURE: THE FOLLOWING LIMITING ASSUMPTIONS

- COEFFICIENT OF ACTIVE PRESSURE, ka = 0.50

MAXIMUM HEAD SLOPE INCLINATION, 2H : IV

MAXIMUM LOCAL SCOUR DEPTH OF 1.0 m

DESIGN ADJUSTMENTS IF AND WHERE REQUIRED.

SHALL CONFORM TO SPECIFICATION SECTION 13.4.1

· PILES SHALL BE DRIVEN TO THE TIP ELEVATIONS SHOWN

RESIST THE SPECIFIED LOADS PRESENTED IN TABLE 1.

ON THE SITE SPECIFIC DRAWINGS, OR LOWER, TO ACHIEVE

AT LEAST THE SPECIFIED MINIMUM BEARING CAPACITIES TO

THE BEARING CAPACITIES SHALL BE ESTIMATED USING THE

FORMULAS PRESENTED IN THE CURRENT SPECIFICATIONS FOR

SPECIFICATIONS FOR BRIDGE CONSTRUCTION.

"FIFLD WELDING OF STRUCTURAL MEMBERS".

- UNIT WEIGHT OF SOIL,  $\gamma = 22 \text{ kN/m}3$ 

(NON-FACTORED)

THE ABUTMENTS

CONSTRUCTION

BRIDGE CONSTRUCTION.

BY MORE THAN 50 mm.

FOR 610 mm DIA PILE.

ADDITIONAL DESIGN ASSUMPTIONS:

WERE USED FOR SUBSTRUCTURE DESIGN. THESE DRAWINGS

- HORIZONTAL SUBGRADE REACTION, ks = 20 000 kN/m2

SHOULD NOT BE USED WHEN ACTUAL SITE CONDITIONS RESULT

IN MORE SEVERE LOAD EFFECTS OR LESS EFFECTIVE RESISTANCE:

- MAXIMUM HORIZONTAL DISTANCE FROM TOP OF FILL MEASURED

THE SCC COMPOSITE DECK PROVIDES LATERAL STABILITY TO

- MAXIMUM PIER HEIGHT LIMITED TO 6.0 m AS MEASURED FROM STREAMBED TO UNDERSIDE OF PIER PILE CAP

- BRIDGE SKEW ANGLES CONSIDERED: 0°, 15°, 30° AND 40°

BRIDGE LENGTH: IT IS THE RESPONSIBILITY OF OTHERS USING

WHEN THE BRIDGE LENGTH EXCEEDS 56.0 m AND TO MAKE

· ALL CONSTRUCTION WORK SHALL CONFORM TO THE CURRENT

· FIELD WELDING OF THE PIER PIPE PILE TO HORIZONTAL BRACE

THESE PLANS TO DETERMINE THE SUITABILITY OF THE DESIGN

THE PIER PILE BENTS BY ACTING AS A DIAPHRAGM BETWEEN

PERPENDICULAR TO BURIED FACE OF ABUTMENT = 1.9 m

- · ALL REINFORCEMENT SHALL HAVE A CLEAR CONCRETE COVER OF 75 mm UNLESS NOTED OTHERWISE.
- · ALL REINFORCEMENT SHALL BE PLACED TO MAINTAIN AT LEAST 40 mm GAP BETWEEN INDIVIDUAL BARS OR BUNDLED BARS.
- PILE CONCRETE SHALL BE CURED AT LEAST 12 HOURS BEFORE PLACING PIER CAP CONCRETE.
- · ALL CORNERS SHALL HAVE A 20 mm CHAMFER OR FILLET
- UNLESS NOTED OTHERWISE. · ALL EXPOSED CONCRETE SURFACES SHALL BE FINISHED AS PER THE SPECIFICATIONS FOR BRIDGE CONSTRUCTION.

(Illandera. DATE august 16, 2005

OM NOO

2 REQUIRED - RIGHT HAND REQUIRED IF SPECIFIED IN 2 REQUIRED - LEFT HAND SITE SPECIFIC GENERAL LAYOUT

DATE 2005-08-09 1 of 4 S-1696-05

# DRAWINGS TO COMPLETE A SITE SPECIFIC HYDROTECHNICAL

ASSESSMENT IN ORDER TO ESTABLISH THE REQUIRED BRIDGE OPENING, TO CONFIRM THE SUITABILITY OF THE DESIGN. ASSUMPTIONS LISTED ON THESE DRAWINGS AND TO SUPPLEMENT TO SUPPLEMENT THESE ASSUMPTIONS WHERE REQUIRED CONSULTATION WITH A QUALIFIED PROFESSIONAL ENGINEER WITH HYDROTECHNICAL EXPERIENCE PRIOR TO THE DESIGN PHASE IS RECOMMENDED.

. IT IS THE RESPONSIBILITY OF OTHERS USING THESE SUBSTRUCTURE

#### DESIGN LOADS AND ASSUMPTIONS

- DESIGN SPECIFICATION: CAN/CSA-S6-00
- DESIGN VEHICLE: CL-800

GENERAL NOTES

A1 DRAWING LAYOUT.

WHERE REQUIRED.

ABUT PILES

270

300

330

370

ABUT PILES

440

480

540

· SCALES WHERE INDICATED ARE APPLICABLE FOR FULL SIZE

. ALL DRAWING REFERENCES REFER TO CURRENT DRAWINGS.

OF THEORETICAL CROWN ON CENTERLINE ROADWAY.

GEOTECHNICAL CONSIDERATIONS

SPANS

10 m

12 m

14 m

SPANS

8 m

10 m

12 m

14 m

HYDROTECHNICAL CONSIDERATIONS

· ROADWAY ELEVATIONS SPECIFIED ELSEWHERE ARE GIVEN TO TOP

IT IS THE RESPONSIBILITY OF OTHERS USING THESE SUBSTRUCTURE DRAWINGS TO OBTAIN THE NECESSARY SITE SPECIFIC GEOTECHNICAL

INFORMATION, A GEOTECHNICAL INVESTIGATION COMPLETED BY A

QUALIFIED PROFESSIONAL ENGINEER SHALL BE UNDERTAKEN PRIOR

TO THE DESIGN PHASE IN ORDER TO ESTABLISH THE SUITABILITY

THE DESIGN AND CONSTRUCTION ASSUMPTIONS ON THESE

SHALL BE DETERMINED BY A QUALIFIED PROFESSIONAL ENGINEER

PIER PILES

PIER PILES

930

1020

10 m | 12 m

660

730

10 m | 12 m | 14 m

770

1080

710 800

830 870

1000 1130

1180 1220

850

930

1190

1320

TO RESIST THE PILE LOADS PRESENTED IN TABLES 1 AND 2.

TABLE 1: MINIMUM BEARING CAPACITY - SERVICE LOADS

620

TABLE 2: MINIMUM BEARING CAPACITY - ULTIMATE LOADS

880

DRAWINGS AND TO PROVIDE SUPPLEMENTARY INFORMATION

. THE PILE TERMINATION CRITERIA AND DESIGN TIP FLEVATIONS

- · DEAD LOAD: ABUTMENT AND PIER CAP SELF-WEIGHT. GIRDER SELF-WEIGHT AND WEARING SURFACE ALLOWANCE AS PER STANDARD SCC COMPOSITE BRIDGE GIRDER DRAWINGS S-1630, S-1631, S-1632, S-1633, S-1634, S-1635 AND S-1636.
- · ICE LOADS: THE FOLLOWING LIMITING ASSUMPTIONS WERE LISED FOR PIER DESIGN AND THESE DRAWINGS SHOULD NOT BE USED WHEN THESE DESIGN CONDITIONS ARE EXCEEDED:
- EFFECTIVE CRUSHING STRENGTH p = 700 kPa - MAXIMUM ICE THICKNESS = 600 mm
- FLOW ANGLE BETWEEN AXIS OF PIER AND STREAM = 0 DEGREES - MAXIMUM HEIGHT OF DECK SURFACE ABOVE STREAMBED = 7.5 m.

**OVERALL** 

WIDTH 'B'

(MOM)

9 870

11 090

12 310

13 530

14 750

15 970

- HEIGHT OF ICE FORCE ABOVE STREAM BED:

CLEAR

ROADWAY

WIDTH 'C'

(MOM)

8 720

9 940

11 160

12 380

13 600

14 820

= MINIMUM 1.0 m = MAXIMUM 1.0 m BELOW UNDERSIDE OF BOX GIRDERS